

REMARKS

Claims 2, 4, 6, 7, and 12-15 are pending. Claim 2 has been amended. No claims have been canceled, and no new claims have been added. Claims 2, 4, 6, 7, and 12-15 will be pending, therefore, upon entry of the above amendments.

Claims 2, 4, 6, 7, and 12-15 have been rejected under 35 U.S.C. § 103(a) as being obvious over U. S. Patent No. 7,141,416 (“the Krutzik patent”) in view of U. S. Patent No. 6,545,758 (“the Sandstrom patent”) and U.S. Patent No. 5,922,617 (“the Wang patent”). Applicant respectfully submits that claim 2 of the present application, as amended herein, is patentably distinct from the Krutzik, Sandstrom, and Wang patents for at least the following reasons.

Claim 2 of the present application has been amended herein to recite, in relevant part:

a biochip cartridge comprising: an optical disc; a substrate mounted on the optical disc, forming a first or a second uppermost layer of the biochip cartridge, and having one or more depressed portions formed therein; at least one or more preformed biochips each comprising bio-cells spotted on the substrate; and at least one or more fixing members, wherein: the at least one or more biochips are removably installed in each of the depressed portions with the one or more fixing members thereunder such that the at least one or more biochips cannot be separated from the optical disc when the optical disc is rotated or moved or the biochip is combined with another substrate thereon; the optical disc is coated with a selective wavelength reflection film; and the reflection film is located between the one or more depressed portions and the optical disk;

Applicant respectfully disagrees with the basis of the rejection of claim 2 for substantially the same reasons set forth in the reply filed on January 14, 2010. In the interest of advancing prosecution of the present application, however, claim 2 has been amended

herein to include various structural limitations that patentably distinguish claim 2 from the Krutzik patent and the other prior-art references of record.

Amended claim 2 of the present application recites, in relevant part: “a biochip cartridge comprising: an optical disc; a substrate mounted on the optical disc, forming a first or a second uppermost layer of the biochip cartridge, and having one or more depressed portions formed therein . . . wherein: the optical disc is coated with a selective wavelength reflection film; and the reflection film is located between the one or more depressed portions and the optical disk.”

The target zones (140) on the optical bio-disk (110) of the Krutzik patent have been characterized in the office action as bio-chips as recited in claim 2 of the present application (office action at pg. 4, lines 13-15.) The depressed areas within which the target zones (140) are located have been characterized in the office action as depressed portions as recited in claim 2. *Id.* The Krutzik patent states: “[t]he target zones (140) are formed by removing the reflective layer 142 [on a substrate (120)] in the indicated shape or alternatively in any desired shape. Alternatively, the target zone 140 may be formed by a masking technique that includes masking the target zone before applying the reflective layer 142.” *Id.* at col. 7, lines 54-58. Thus, the depressed areas within which the target zones (140) are located are not formed in a substrate of the optical bio-disk (110) of the Krutzik patent, but instead are formed in a reflective layer (142) on the substrate. The depressed portions of the biochip cartridge recited in claim 2 of the present application, by contrast, are formed in the substrate and not the reflective layer.

Moreover, amended claim 2 further recites, in relevant part: “the reflective layer is located between the one or more depressed portions and the optical disk.” Because the “one or more depressed portions” of the optical disk of the Krutzik patent are formed in the reflective layer, the reflective layer cannot be located between the “one or more depressed portions” and a substrate (or any other structure) of the Krutzik optical disk.

Applicant respectfully submits, therefore, that the Krutzik patent neither teaches nor suggests “a biochip cartridge comprising: an optical disc; a substrate mounted on the optical disc, forming a first or a second uppermost layer of the biochip cartridge, and having one or more depressed portions formed therein . . . wherein: the optical disc is coated with a selective wavelength reflection film; and the reflection film is located between the one or more depressed portions and the optical disk,” in contradistinction to amended claim 2 of the present application. Applicant respectfully submits that the other prior-art references of record likewise neither teach nor suggest these limitations.

Claim 2 has also been amended to recite that the substrate in which the one or more depressed portions are formed “[forms] a first or a second uppermost layer of the biochip cartridge.” The reflective layer (142) of the Krutzik optical disk, in which the “the one more depressed portions” are formed, is not a first or second uppermost layer of the Krutzik optical disc. Applicant respectfully submit, therefore, that the Krutzik patent neither teaches nor suggests “a substrate mounted on the optical disc, forming a first or a second uppermost layer of the biochip cartridge, and having one or more depressed portions formed therein,” in contradistinction to amended claim 2 of the present application. Applicant respectfully

submits that the other prior-art references of record likewise neither teach nor suggest this combination of limitations.

Amended claim 2 of the present application also recites, in relevant part: “a biochip cartridge comprising . . . a substrate . . . having one or more depressed portions formed therein; at least one or more preformed biochips each comprising bio-cells spotted on the substrate; . . . wherein: the at least one or more biochips are removably installed in each of the depressed portions”

The target zones (140) of the optical disk of the Krutzik patent have been characterized in the office action as biochips as recited in claim 2 of the present application (office action at pg. 4, lines 13-15).

The office action states: “Wang teaches installation of preformed arrays onto a biodisc wherein the installation is performed using ‘any convenient means’ and wherein the preformed arrays provide ‘greater flexibility in assaying samples while still providing rapidity and accuracy Hence, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to preform the target zones of Krutzik for installation within the grooves of the fluidic circuit” (office action at pg. 8, lines 20 – pg. 9, line 4). Applicant respectfully disagrees. Applicant respectfully submits that the target zones (140) are an integral part of the optical disk of the Krutzik patent, and modifying the Krutzik optical disk to accommodate a preformed and removable bio-chip would change the principle of operation of the Krutzik optical disk and would render the optical disk unsatisfactory for its intended purpose.

The Krutzik patent states:

The optical bio-disc device 110 builds upon a polymer optical bio-disc with nanometer thick layer of a reflective metal 142 or 143, integrated information for reading the optical bio-disc by means of a laser being part of an optical reader and a biochemical layer. It is the function of the biochemical layer of the optical bio-disc to interact with substances of the analyzed specimen, in such a way, that only a specific analyte is selected, becomes bound and quantified. This aspect of the present invention is illustrated in FIG. 26 depicting an enlarged detailed partial cross sectional view of a capture or target zone 140 showing the substrate 120, and metal layer 142 or 143 as implemented respectively on the reflective or transmissive formats of the optical bio-disc 110 of the present invention. FIG. 26 also shows interlayers or the active layer 144 capture agent 204, analyte 200, signal agent 210, and the reporter bead 211 of the present optical bio-disc 110. . . . FIG. 26 illustrates the capture agent 204 attached to chemical interlayers 144 on the metal layer 142 or 143. In this embodiment, the capture agent 204 binds onto the interlayer 144 through various chemical processes described below in detail. . . . The bond between the capture agent 204 and the active or inter layer 144 is sufficient so that the capture agent 204 remains attached to the active layer 144 within the target zone 140, when the optical bio-disc 110 is rotated. FIG. 26 also depicts the target agent or analyte 200 bound to the capture agent 204. The Krutzik patent at col. 20, line 31 - col. 21, line 5.

The above passage from the Krutzik patent indicates that the capture or target zones (140), which have been characterized in the office action as bio-chips as recited in claim 2 of the present application, are an integral part of the optical disk of the Krutzik patent. Thus, modifying the Krutzik optical disk to make the capture zones (140) preformed and removable based on the teachings of the Wang patent would change the principle of operation of the Krutzik optical disk and would render it unsatisfactory for its intended purpose. Therefore, one of ordinary skill in the art would not have found it obvious at the time of invention to modify the capture zones (14) of the Krutzik optical disk in this manner based on the

teachings of the Wang (or Sanstrom) patents. (*See* 2143.01 of the Manual of Patent Examining Procedure.)

Applicant respectfully submits, therefore, that the Krutzik, Wang, and Sandstrom patents, alone or in combination, neither teach nor suggest the following limitations recited in amended claim 2 of the present application: “a biochip cartridge comprising . . . a substrate . . . having one or more depressed portions formed therein; at least one or more preformed biochips each comprising bio-cells spotted on the substrate; . . . wherein: the at least one or more biochips are removable installed in each of the depressed portions”

Applicant respectfully submits that claim 2 of the present application is patentably distinct from the prior-art references of record in view of the above amendments and remarks. Accordingly, withdrawal of the rejection of claim 2 (and claims 4, 6, 7, and 12-15 which depend therefrom) under 35 U.S.C. 103(a) is respectfully requested.

Applicants respectfully submit that the present application is in condition for allowance in view of the above amendments and remarks. A notice of allowability, therefore, is respectfully requested.

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